Mesquito Presentation

User Requirement Questions, Avionics

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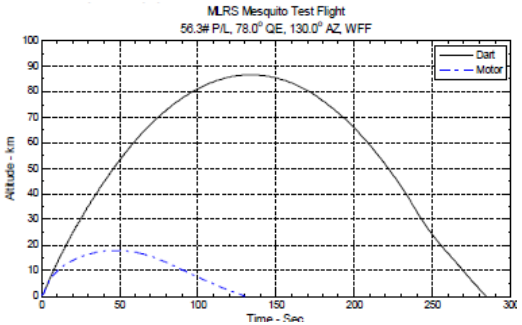
Mesquito User's Requirements

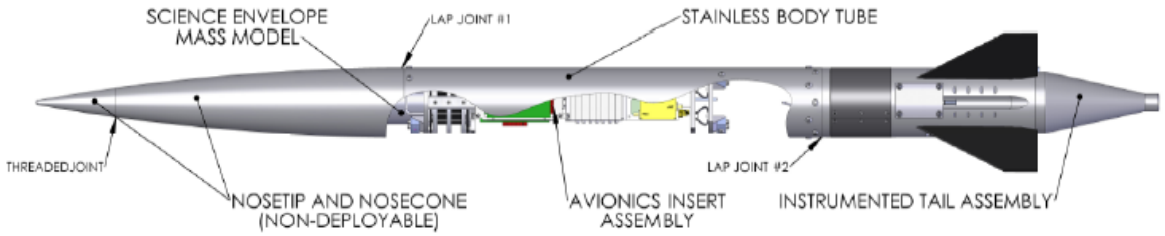
- Apogee
  - Science Request: 100 km desired, 90 km nominal
  - Predicted Capability: 86 km @ 78˚ QE, 90 km @ 84 ˚ QE

  What is lowest acceptable apogee for proposed science?



- Payload Physical Characteristics
  - Science Request:
    - Mass TBD
    - Science Volume: 6" Ø desired (4" Ø nominal) x 12" L desired (8" L nominal)
    - Deployable nosecone to expose science instruments
  - Predicted Capability:
    - Mass: 5-7 lbs of science payload (avionics accounted separately)
    - Science Volume of 3.9" Ø x ~5" high
    - Deployable nosecone concept developed; detailed design, build, & test outstanding

  Are volume & mass allocations acceptable for proposed science?



Mesquito User's Requirements

- Launch Flexibility: Rapid Launch for Temporal Measurements
  - Science Request: Ability to launch up to 6 payloads in 3hr period; mobile launcher capability for use at non-standard ranges
  - Predicted Capability: Feasibly to launch 2 (maybe 3) per 3 hr window per launcher. Booster mass (~340 lbs) requires staging approaches akin to larger SR vehicles rather than Viper-Dart class vehicles.

Will the predicted launch frequency meet goals of proposed science?

- Target Cost (Vehicle, Payload, Ops)
  - Science Request: $^{1}/_{6}^{th}$ cost of ionospheric mission
  - Preliminary assessment indicates MLRS mission cost could be ~45% of cost of a comparable single stage Orion mission

What is the cost threshold for apogee for proposed science? Would single-stage Orion class vehicle meet needs (similar performance, increased volume & mass allocation, recovery option)?

Mesquito User's Requirements

- Proposed Avionics
  - New 2 Watt high efficiency transmitter
  - New combo GPS/S-band Antenna
  - New PCM encoder (NSROC in-house)
  - New GPS Receiver
  - Accel & Attitude Sensors: WAASP, 3-axis accel, magnetometer, solar aspect
  - Power distribution
  - Electronic Timer (surface mount RPFMT)
  - Pyro CDI system